Environmental Health

The health of Maine citizens is constantly being challenged by contaminations to our environment. Over the last decade new pollutants have found their way into the air we breathe and the water we drink. In addition, many instances of personal discomfort are due to contaminants in our home environment. High among these are secondhand smoke, radon, (the second highest cause of lung cancer after tobacco smoke), lead (from lead paint and drinking water), and poor indoor air quality (generally from molds and spores).

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Healthy Maine 2000 Goals

Enhance the safety of the environment and reduce adverse impacts on the health of Maine's citizens.

Overview

During the 1990s, environmental health issues occupied an increasing amount of attention in Maine. New mercury-driven fish consumption advisories, the conflicting views on the use of the gasoline additive MTBE to help clean Maine's air, recognition of previously unnoticed natural contamination of groundwater with arsenic and radon, and a general awareness of both indoor and outdoor air quality, have kept environmental experts and stakeholders on the alert. Now, more than ever before, Maine people are focusing on the relationship between environmental conditions and adverse health outcomes.

The public has begun to realize the seriousness of the risk to health from such environmental pollutants as secondhand smoke.

Significant progress was made during the decade in improving the safety of public drinking water supplies. We are fortunate in Maine to have generally safe and plentiful supplies of drinking water. Our water resources have improved considerably since the passage of the Clean Water Act and the Safe Drinking Water in the early 1970's. Maine rivers that only 20 years ago were heavily polluted are now swimmable, and fish are returning. Despite our excellent progress, many threats to our drinking water still exist. Although people in the United States no longer die from once common waterborne diseases such as typhoid and cholera, people do get sick and even can die from drinking water contaminated with fecal bacteria. Recent scientific studies link some chronic illnesses to the long term ingestion of contaminated water. Regulations for more contaminants have emerged and existing regulations have gotten more complicated over the last ten years. Public water systems in Maine are working hard to upgrade their treatment systems to meet these new regulatory demands. Public water systems are also devoting significant resources to protecting their water sources by acquiring land in their watersheds and providing public outreach and education.

Radon screening is now required in many real estate transactions. Reported food-borne diseases due to poor conditions at restaurants have declined over the decade, as better food handling practices and food handler training have become the norm. In addition, the public has begun to realize the seriousness of the risk to health from such environmental pollutants as secondhand smoke.

New and Emerging Issues

During the 1990s, new information on levels of mercury in freshwater fish led to the imposition of stricter and statewide fish consumption advisories than had been in place at the beginning of the decade. The need to limit consumption of fish from all fresh waters is likely to continue for some time, as mercury is a very persistent toxicant in the environment. As more detailed data become available, it may be possible to tailor advisories to specific bodies of water.

Significant progress was made during the decade in improving the safety of public drinking water supplies.

At the same time, legislation regulating the discharge of dioxins from Maine's mills, along with a general environmental awareness by the mills, has led to reduced dioxin levels in Maine's fish and Maine's rivers. This trend should continue as the new law is fully implemented. However, fish consumption advisories will continue to be required for mercury and for PCBs, as well as for DDT in a few watersheds. In view of the benefits to cardiovascular health from eating fish, the necessity of issuing fish advisories is troublesome. Work to balance the risks and benefits of fish consumption continues.

Several pieces of legislation, passed throughout the 1990's, led to the elimination of secondhand smoke from the vast majority of indoor public places, including restaurants. Since this toxin is a class A carcinogen and kills on average one Maine person every day, these new smoke-free environments should significantly improve the health of Maine's citizens. However, exposure to secondhand smoke is still very common in outdoor public places.

The federal Safe Drinking Water Act Amendments of 1996 provide greater protection and information to the 250 million Americans served by public water systems. These changes laid the groundwork to prepare for and address future drinking water safety challenges. Four themes characterize the areas of greatest change, including the public's right to know, focusing on the contaminants of greatest risk, funding and tools to states and water systems, and pollution prevention.

Groundwater sources of drinking water, particularly those used by private well owners, have come under increased scrutiny during the decade. Arsenic has been documented in many private wells, with levels in as many as 10-20% of wells exceeding health limits. High levels of radon are also commonly found in Maine's groundwaters. Educational efforts to increase awareness of these threats continue. In addition, MTBE, an additive present in large quantities in reformulated gasoline, has been detected in an alarming number of wells. This finding led the state to "opt out" of the federal reformulated gasoline program. Reduction in the use of MTBE should curtail further increases in this threat to our groundwater.

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The unexpected closure of the state's only nuclear power plant has led to major work in overseeing the decommissioning of the site, and ensuring the safe disposal of radioactive waste and debris.

Along with secondhand smoke, the biggest environmental threat to the health of our children is lead poisoning. Lead, like mercury, is a heavy metal that causes nervous system damage. Fetuses and young children, because their nervous systems are still developing, are particularly at risk for brain damage from lead exposure. This damage can lead to neurological problems such as learning disabilities.
Half of Maine's buildings were built before 1960, the year when lead concentrations in paint decreased substantially. Therefore, half of our homes are at high risk for the presence of lead paint. Since lead was not banned from residential paint until 1979, any home built or furniture painted before that is considered to be at some risk.

Exposure to lead paint is often from unseen sources such as lead paint dust. Maine has faced substantial challenges in addressing lead poisoning, including our high-risk housing population, low screening rates among our children, and high lead poisoning rates among those who are screened. For instance, early in the decade, only 1 in 6 children under 6 years of age were screened; 1 in 7 screened children were found to be poisoned. By the end of the decade, screening rates increased in children with Medicaid insurance, but otherwise decreased. Lead poisoning rates decreased to 1 in 20 children screened, but still remain very high. We continue to face challenges in our task of assuring that parents have the tools to prevent lead poisoning in their children, preferably before pregnancy, and also in eradicating identified lead hazards.

Healthy Maine 2000 Objectives

Objectives established to enhance the safety of the environment and reduce adverse impacts on the health of Maine's citizens

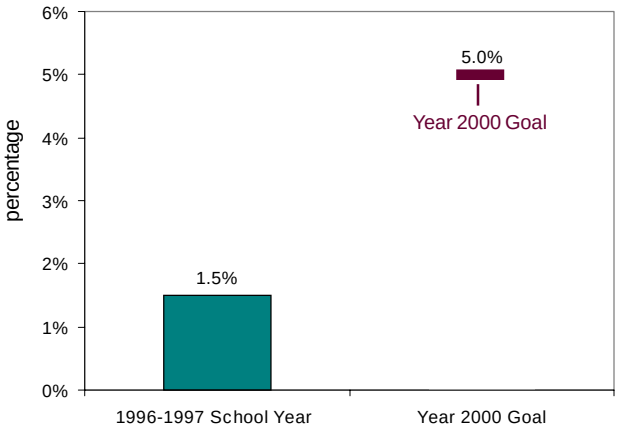
Health Status Objective

Increase to 5% statewide asthma education curriculum entitled "Open Airways" in elementary schools.

Maine 1996-1997 School Year Baseline: 1.5%
Most Recent Data, 1996-1997: 1.5%

The American Lung Association of Maine's (ALAM) "Open Airways" curriculum has proven to be challenging for schools to implement. Although more participation is expected in the next year, a new ALAM initiative is working to develop a "Lung Healthy" curriculum. This program covers not only asthma management and education, but also indoor air quality, and tobacco prevention and control. It will be more flexible for schools to adapt to their needs. Ultimately, the new curriculum will be integrated into Coordinated School Health programs.

Proportion of Maine Elementary Schools Statewide with Asthma Education Curriculum Entitled "Open Airways"



Source: Maine Department of Human Services, Bureau of Health, Program Data

Health Status Objective

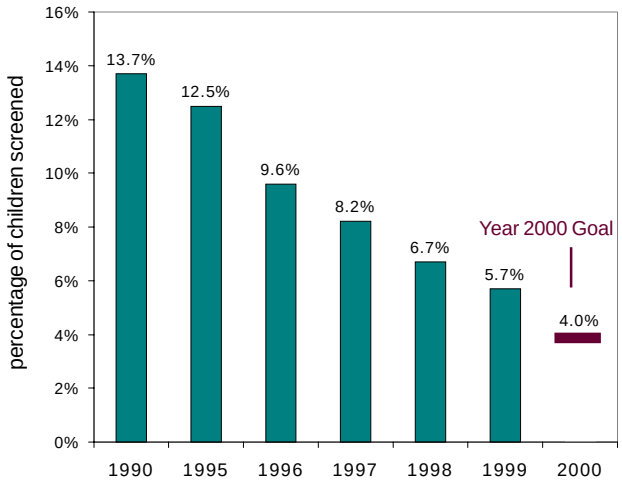
Reduce to no more than 4% the prevalence of blood lead levels exceeding 10 ug/dl among screened children aged 6 months to 6 years.

Maine 1990 Baseline: 13.7%
Most Recent Data, 1999: 5.7%

The Bureau of Health's public health lab has maintained a comprehensive blood lead database since 1993. However, in some cases, children are tested more than once. In 1996, the state developed the capacity to compute the number of children screened, distinct from the number of lab tests. This represents a substantial improvement in accuracy. Therefore, we are using 1996 for our baseline in estimating the number of children screened and percent of children with elevated blood lead levels.

While the prevalence of elevated blood lead levels among children screened has decreased, it is difficult to interpret this trend since the overall screening rates have steadily declined. The screening rate in all age groups has never exceeded 25%. Yet, with almost half of Maine homes built prior to 1950, the risk of lead exposure for young children is quite real.

Proportion of Maine Children Screened (Aged 6 months to 6 yrs) with Blood Lead Levels > 10ug/dl Selected Years 1990-1998



Source: Maine Department of Human Services, Bureau of Health, Childhood Lead Poisoning Prevention Program Data

Note: In 1990, 1995 & 1996 there was no population-based data available. Therefore in 1990: 13.7% of 9,313 samples; 1995; 12.5% of 14,400 samples; and in 1996: 12.8% of 12,733 samples screened by the state lab were above 10 ug/dl. Data collected for 1997 through 1999 reported that: 17% of Maine's 1 &2 year olds were screened and 10% of 3-5 year olds. 10% of all children screened were above 10 ug/dl. In 1998, 23% of 1 & 2 year olds were screened and 8% of 3-5 year olds. 6.7% of all children screened were above 10 ug/dl. Data for 1999 reports 25% of 1 and 2 year olds were screened and 7.6% of 3-5 year olds. 5.7% of all children screened were above 10 ug/dl.

Healthy Maine 2000 Objectives

Objectives established to enhance the safety of the environment and reduce adverse impacts on the health of Maine's citizens

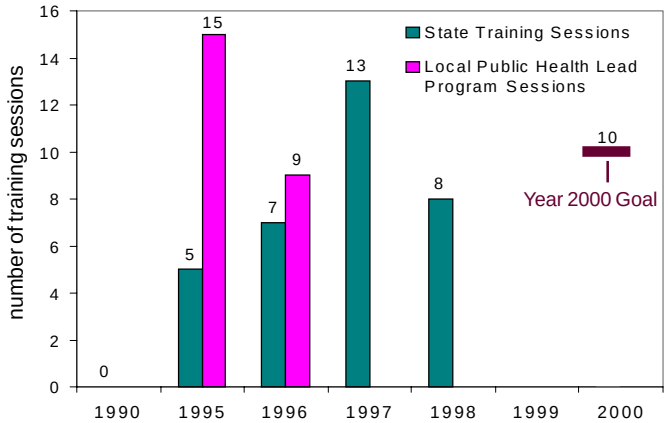
Public Awareness Objective

Increase to 10 per year the number of outreach training sessions dealing with lead as an environmental health risk delivered to individuals providing lead-related services, owners of child care facilities, landlords and property owners who rent to families with children under the age of 6.

Maine 1990 Baseline: 0 Training Sessions
Most Recent Data: 1998, 8 Training Sessions

Throughout the 1990's, the Bureau of Health worked increasingly with other state agencies to provide high quality, comprehensive lead training sessions. Training partners included the Maine Department of Environmental Protection, Maine State Housing Authority, Maine Medical Center, and the Muskie School/ University of Southern Maine. The training sessions targeted such diverse audiences as realtors, property owners, childcare providers, Community Action Programs, and doctors and nurses. A Lead Advisory Committee was formed with statewide multi-disciplinary representation. This committee continues to meet in Augusta on a bi-monthly basis.

Maine's Number of Outreach Training Sessions Dealing with Lead as an Environmental Health Risk Selected Years 1990-1998



Source: Maine Department of Human Services, Bureau of Health, Childhood Lead Poisoning Prevention Program Data

Health Status Objective

Reduce to zero the number of coliform bacteria Maximum Contaminant Level (MCL) violations in public water systems.

Maine 1990 Baseline: 70 Violations
Most Recent Data: 1999, 279 Violations

Since this objective was written, the Standard for coliform violation has been lowered by EPA from 1 colony to zero. In addition, the laboratory community has instituted more sensitive testing methods. These stricter regulations have increased the frequency of coliform testing. As a result, this indicator appears not to have been achieved. However, microbial quality of Maine water may have improved as new treatment and protection options have been exercised, and as more aggressive testing has taken place. The number of systems providing some form of treatment has increased every year since 1990.

Maine Public Water Systems: The Number of Systems Inspected with Coliform Bacteria MCL Violations 1991-1999

Year	Total Number of Systems Inspected	Number of Coliform Bacteria MCL Violation	Proportion of Systems Inspected with Coliform Bacteria MCL Violation
1991	3,800	70	1.8%
1992	3,800	97	2.5%
1993	3,800	102	2.6%
1994	3,300	97	2.9%
1995	2,200	175	7.9%
1996	2,440	278	11.4%
1997	2,334	185	7.9%
1998	2,236	237	10.6%
1999	2,158	279	12.9%
2000	Year 2000 Goal	0	

Source: Maine Department of Human Services, Bureau of Health, Drinking Water Program Data

Healthy Maine 2000 Objectives

Objectives established to enhance the safety of the environment and reduce adverse impacts on the health of Maine's citizens

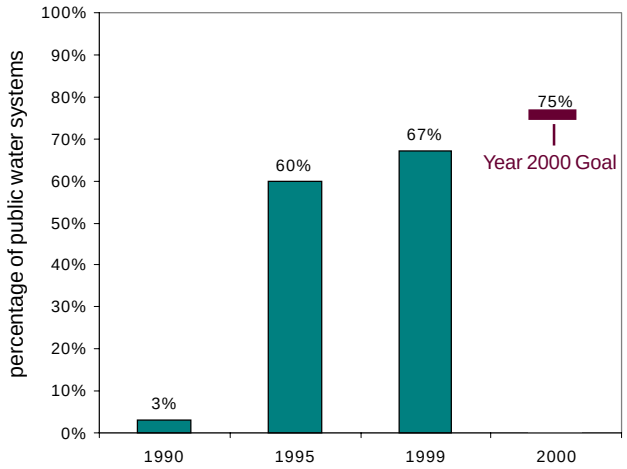
Services and Protection Objective

By the year 2000, 75% of the 2,200 public water systems that are rated vulnerable to contamination will have installed water treatment equipment to ensure that drinking water meets health requirements.

Maine 1990 Baseline: 3% With Installed Equipment
Most Recent Data: 1999, 67% With Installed Equipment

The achievements in this objective are especially remarkable, given that new standard and requirements have been added by EPA each year. Many more systems are labeled as "vulnerable" than existed at the beginning of the decade. Notwithstanding this fact, the number with installed treatment equipment has risen dramatically. Further increases are expected, given the available financial resources through such programs as the State Revolving Loan Fund (SRF). The Drinking Water Program (DWP) has also worked with public water systems to abandon some of the more "vulnerable" sources. These sources have been replaced with source water protection zones which help to protect the sources from contamination.

Maine's Proportion of Public Water Systems Rated Vulnerable to Contamination With Installed Water Treatment Equipment Select Years 1990-1998



Source: Maine Department of Human Services, Bureau of Health, Drinking Water Program Files, 1990-1999

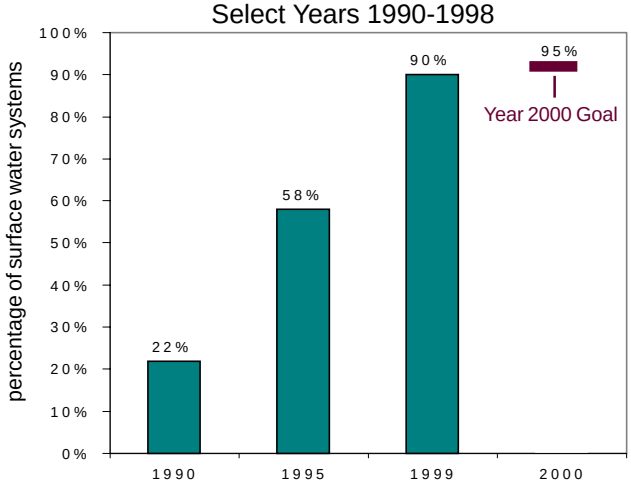
Services and Protection Objective

By the year 2000, 95% of the 68 surface water systems will be capable of preventing waterborne disease caused by Giardia lamblia and cryptosporidium.

Maine 1990 Baseline: 22%
Most Recent Data, 1999: 90%

The implementation of EPA's "Surface Water Treatment Rule", coupled with funding available for installation of equipment through the State Revolving Loan Fund (SRF), for installation of water treatment facilities have resulted in this tremendous gain in protection from protozoa. Additionally, the EPA has recently enacted the Surface Water Treatment Rule and will soon enact the Long Term 1 Enhanced Surface Water Treatment Rule. These two rules should lead to further reductions in the occurrence of waterborne diseases from these organisms." The goal of 95% should be met by 2002.

Maine's Proportion of the 68 Surface Water Systems Capable of Preventing Waterborne Disease Caused by Giardia Iamblia & Cryptosporidium Select Years 1990-1998



Source: Maine Department of Human Services, Bureau of Health, Drinking Water Program Files, 1990-1999

Healthy Maine 2000 Objectives

Objectives established to enhance the safety of the environment and reduce adverse impacts on the health of Maine's citizens

Services and Protection Objective

By the year 2000, evaluate wellhead areas for 800 public water systems for impact from surface waters, vulnerability to chemical uses, review the required management plan, and input all relevant well data into the state Geographical Information Systems (GIS).

Maine 1990 Baseline: 0
Most Recent Data: 1999, 706

Substantial progress has been made in this vital area through the use of both modern technology, such as GIS, and through the use of SRF funds to delineate wells in sand/gravel aquifers. Current efforts to delineate bedrock wells should allow achievement of this objective by 2001 or 2002.

Maine's Proportion of Wellhead Areas Evaluated According to the Objectives Criteria Selected Years 1990-1999

1990	Zero
1996	Process completed for 435 public water systems
1999	Evaluated 706 community and non-community non-transient wellheads. 884 Management plans were received and reviewed (some PWSs have multiple sources).

Source: Maine Department of Human Services, Bureau of Health, Drinking Water Program Files, 1990-1999

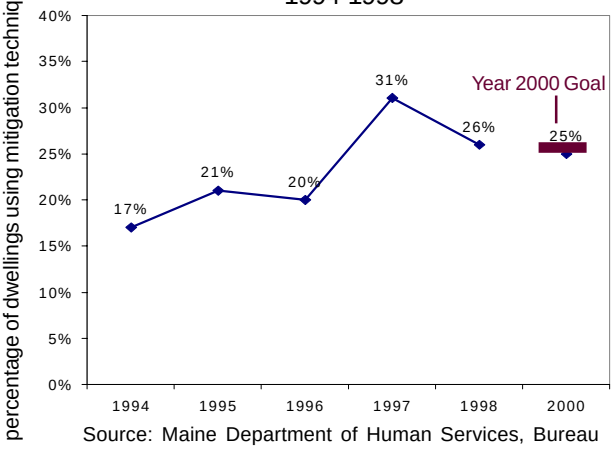
Services and Protection Objective

Of the dwellings that exceed the current indoor radon standard (4 pCi/l) increase to at least 25% those dwellings that have used mitigation techniques to lower radon levels to below 4 pCi/l.

Maine 1994 Baseline: 17%
Most Recent Data, 1998: 26%

Radon awareness has increased due to the Bureau of Health's Radon Program, private initiatives, and requirements by financial institutions for radon screening on home purchases. Although the data shows fluctuation, it is clear that the objective has been achieved, and should continue to be achieved in the next few years. Given the high health risk of radon exposure, relative to most indoor air contaminants other than secondhand tobacco smoke, this achievement may be saving measurable lives.

Maine's Dwellings Which Exceed Current Indoor Radon Standard (4 pCi/l) Which Have Used Mitigation Techniques 1994-1998



Source: Maine Department of Human Services, Bureau of Health, Radon Program Files, 1990-1999

Healthy Maine 2000 Objectives

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Services and Protection Objective

Establish a database to identify and track smoke free eating and lodging establishments and liquor establishments licensed by the Department of Human Services and the Department of Public Safety.

Maine 1994 Baseline: None Surveillance
Most Recent Data: 1999, New Legislation

Although a database was created in the mid-1990s, the passage of the 1999 smokefree restaurant law made tracking this data relatively easy. However, the Bureau of Health's restaurant inspectors are continuing to ensure compliance with the new law.

Maine's Status on Establishing a Database to Identify and Track Licensed Smoke Free Establishments
1996-1999

1994	All 6,000 public indoor eating establishments must accommodate non smokers.
1999	All public indoor eating establishments are smoke free, except those that cannot serve minors under 21 years of age. There are about 325 establishments out of 6,000 that fit this exemption.

Source: Maine Department of Human Services, Bureau of Health, Program Files, 1996-1999

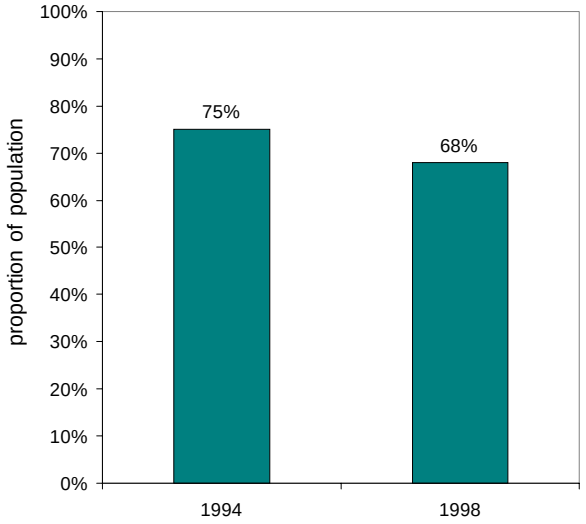
Risk Reduction Objective

Reduce to 50% the proportion of the state's population living in counties that exceed the State recommended ozone concentration, and reduce to zero the proportion that live in counties that exceed the federal ozone standard.

Maine 1994 Baseline: 75%
Most Recent Data: 1998, 68%

Achievement of this goal is complicated for Maine, due to the interstate nature of ozone transport, and ozone-precursor transport. Overall air quality enhancement has probably contributed to some of this reduction. Further regional and national efforts, implemented in the late 1990's with Maine's leadership, should help achieve this objective in the next few years.

Proportion of Maine's Population Living in Counties Exceeding the State Recommended Ozone Concentration
Selected Years 1994 & 1998



Source: Maine Department of Human Services, Bureau of Health, Program Files, 1994-1998